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Night search:

- tracking tape and reflector tape
  - for night search; suggest check out area in day and mark with tracking tape; stick pieces of reflector tape on to tracking tape for night markers, make sure that some is folded over each side so there is some visible if the tape is blown about/gets caught in vegetation
- caving light

Handling

- handle in piece of cloth to reduce risk of damaging specimen
- if handling without cloth hold firmly *(but do not squeeze)* by the pronotum *(saddle-shaped part of thorax behind head)* and never by the abdomen or legs
- if releasing always replace on site of capture; if in the day make sure the weta is under cover
- if searching for weta under stones examine inside the more rounded end of the cavity where the weta may be obscured by earth
- take care not to 'squash' the weta or trap part of its body when replacing the stone
- weta have sharp mandibles and will bite defensively; they are not venomous but it is wise to wash any weta bite, since they are scavengers and omnivores likely to harbour decaying material on the mouthparts

Information

Record:-

- date, time, name of observer
- location *(grid reference and sufficient description to enable someone else to find the area)*
- if doing night search note time (0000 h) and weather *(include. ambient temp. if possible)*
- habitat type
- site description
- weta details

  * sex (male with tusk, female with ovipositor; not distinguishable if body length less than about 18 mm)
  * male tusk form *(estimate length right tusk from base -tip; note whether symmetrical and not meeting, or asymmetrical and crossed at tip)*
  * body length - place caliper over front of head and end of body *(not very precise due to soft abdomen and posture of weta, but a good general indicator of weta size*

length of right hind femur *(easy for right-handed person; do left if left-handed)*

pronotum length *(place caliper/pointers along dorsal midline)*

- if the specimen is collected, note what was done with it or where it was sent to

Transporting weta

- pack in damp moss/leaf material keep dark, moist and cool *(do not leave in sun)*

9.3 TE ARAROA WETA 1997

Further Raukumara tusked weta were examined in 1997. Three bodies were found by DoC staff at Te Araroa near East Cape. This extends the known range eastwards by about 100 km. It is also isolated from the main Raukumara forest area, and probably a remnant of a formerly continuous population. One weta body was found on a stream margin in May 1997 (NZMS260 Z14 847 816), the other two floating in a pool of water in October (Z14 887 216), although they were all approximately the same body size, Fig. 6.

All three were small males and two of these clearly possessed the adult tusk form. The third (collected in October) was probably adult, with tusks meeting and turning slightly downward at the tip, though the tusk asymmetry, normally associated with adult status was barely evident. The October specimens are unlikely to have moulted over the winter, and thus probably reached the recorded body size by May. Tusk lengths (3.5-4.7 mm) are at the lower end of the range in Fig. 4.

These males were smaller than any previously collected adults and fit the size range of sub-adult males observed in April 1996, Fig. 6. They appear to have become adult at an earlier instar than the adult males collected in April. The finding of smaller males and timing of finds is significant. This may represent a similar situation to that seen for Mercury Island tusked weta. Large Mercury I. adult males have been found only in February and March, and small-medium sized adults during winter. The smallest adults and largest juveniles (larger than medium-sized adult males but still in sub-adult stage with juvenile tusk form) were found in the period October-December. Further information would be needed to view this in an ecological context. However, if the Raukumara species is similar to the Mercury Island species in this regard this will add to its utility as a research model for overcoming some of the problems in captive management of the Mercury I. species.

Dr George Gibbs (Victoria University) on a private trip in December 1997 found further middle-instar juveniles which added two new sites within the range of the known distribution. These were under stones along stream margins as previously. Data for three specimens from the Tauranga Stream in the Waioeka Gorge (W16 243 863) and one from the

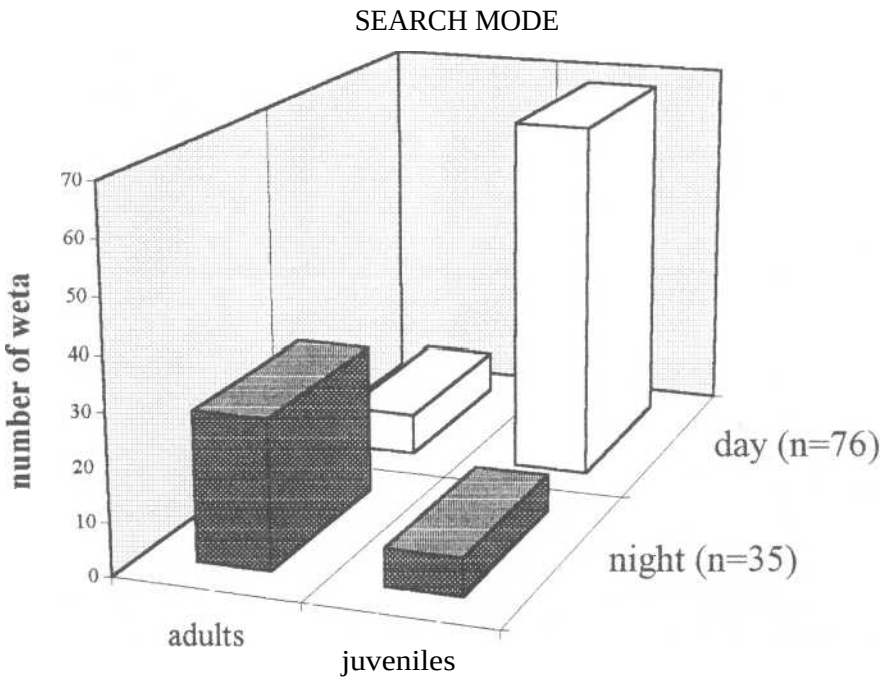
Karakatuwhero Valley, Pukeamaru block (Z14 803 768) are included in Fig. 6. As predicted these fill a size gap in the April 1996 data. I suggest that they were in the hatchling size range in April 1997 and through the winter, but have moulted once or twice in the meantime. These data add support to seasonal time frame suggested above.

It would now be of interest to examine the extent of their westward (to Mamaku/Kaimai Ranges?) and southward (to Huiarau Ra.?) distribution. Such information would contribute to a baseline to examine any future reduction of range and to appreciation of the extent and survival of indigenous biodiversity.

Hatching record

A batch of 15 eggs produced by a captive reared female before June 1997 were kept in damp sand until January 1998. One, in which well-developed mandibles, eyes and antennae were visible, hatched two days after extraction from the substrate on 22 Jan. 1998. The time was consistent with expectations for an egg deposited in the early part of the winter.

A



B

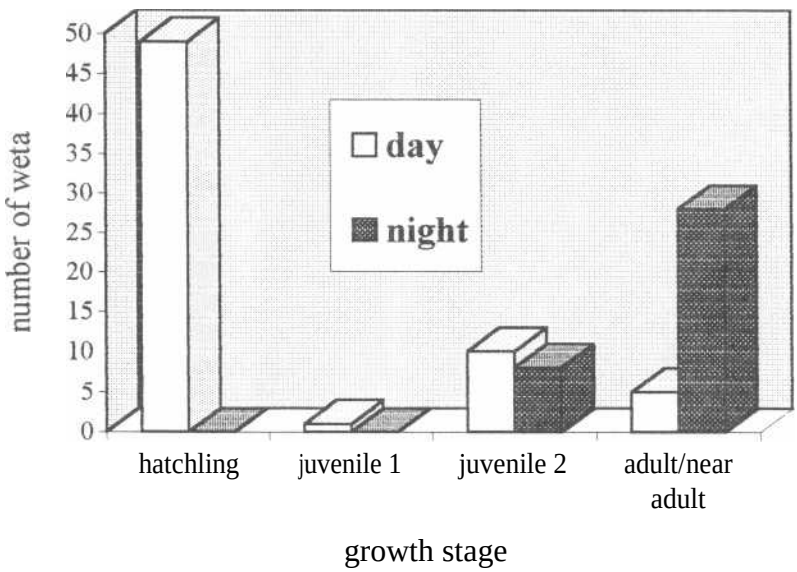


Figure 1. Live weta counts (excluding bodies): A. breakdown of numbers for day and night searching, B a breakdown of numbers for day an night search according to growth stage.

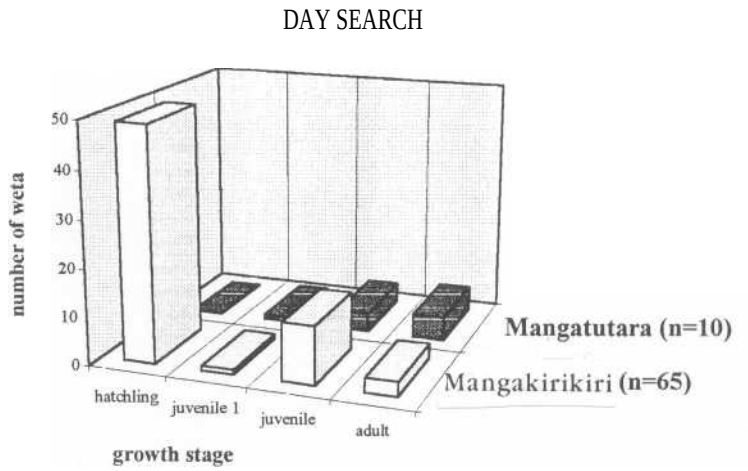
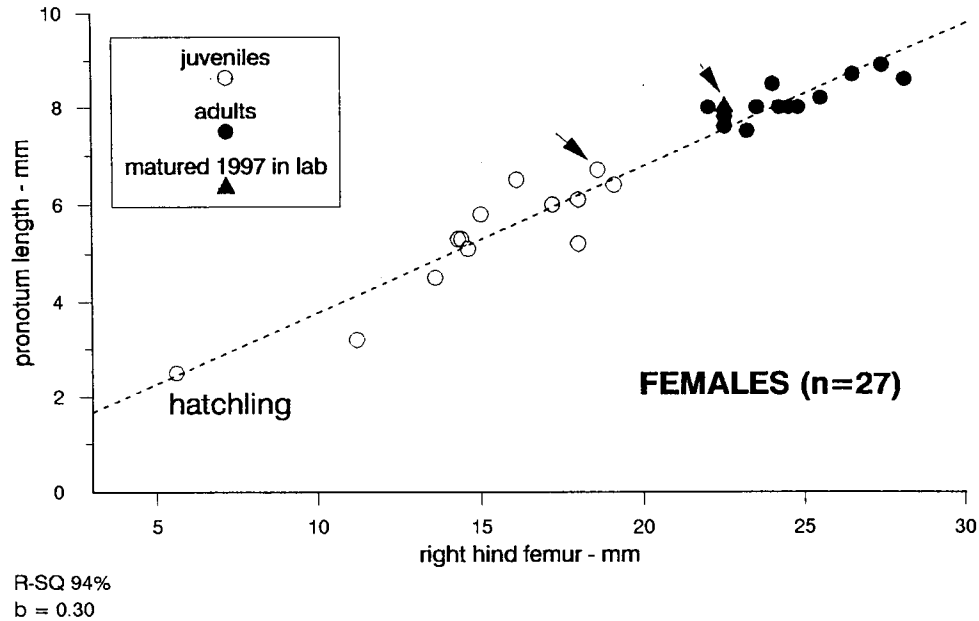


Figure 2. A breakdown of live weta (*excl. bodies*) day search counts according to search area.



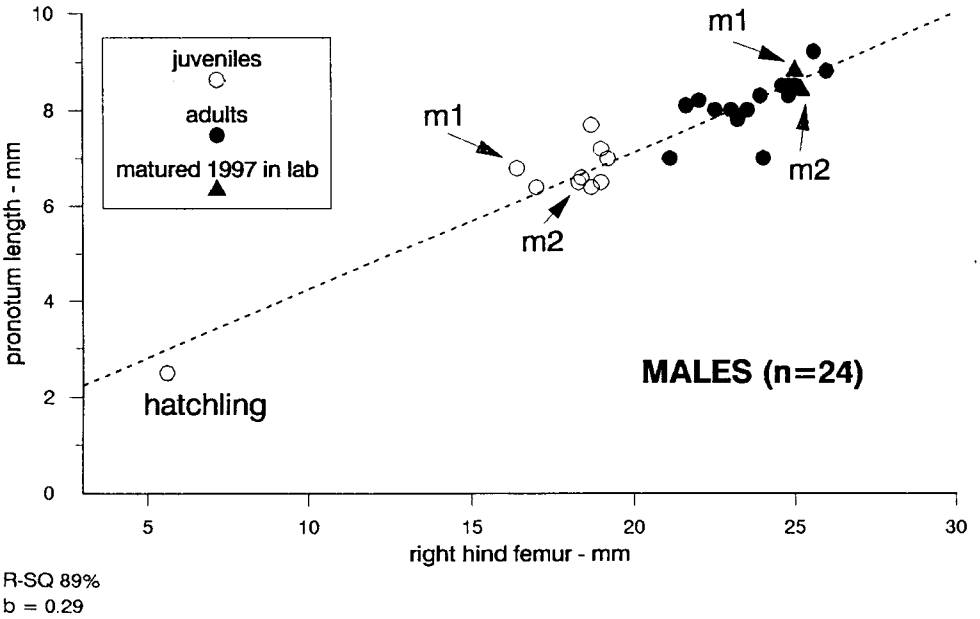


Figure 3. Body size of weta in field survey, with captive weta indicated (m1, m2 = same individuals as juveniles at time of capture and adults reared in captivity). The hatchlings are represented by the same individual on upper and lower plots as a point of reference.

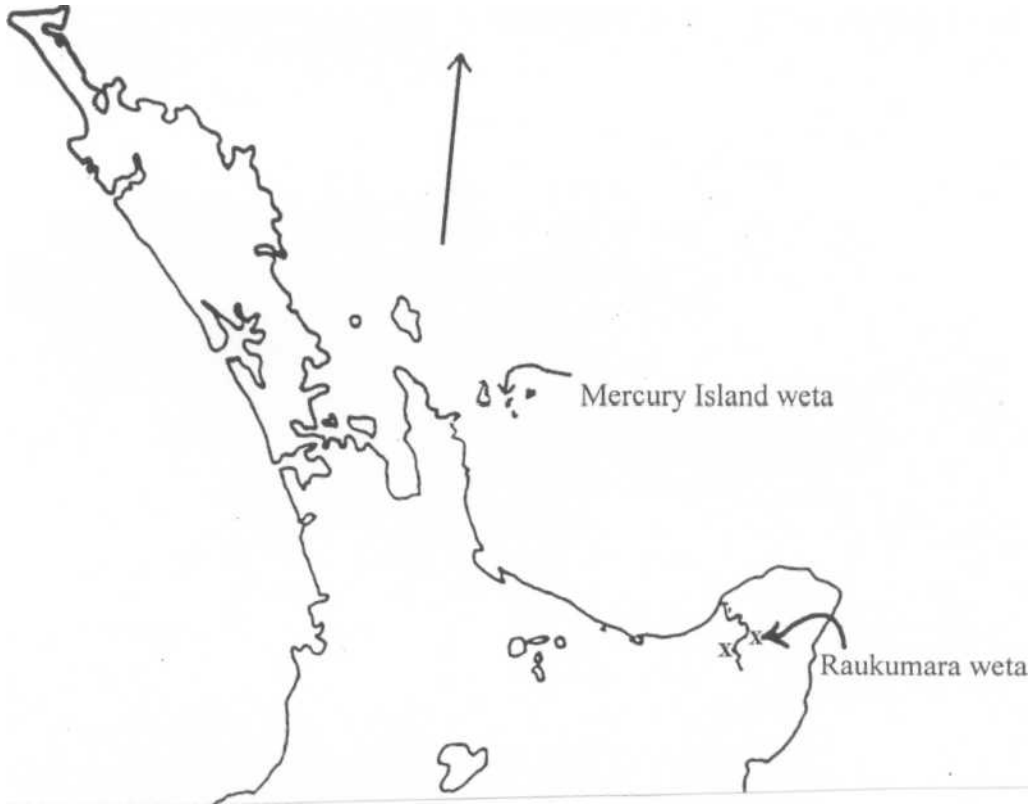


Figure 4. Locations for the Raukumara tusked weta expedition April 1996 and the Mercury Islands tusked weta.

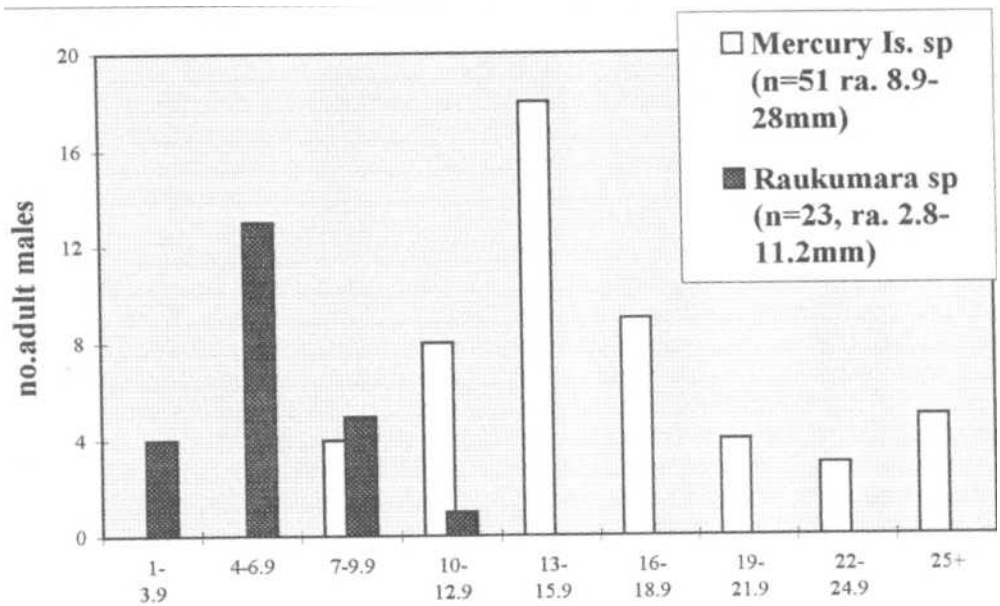


Figure 5. The range of tusk lengths in the Mercury Islan Raukumara tusked weta species.

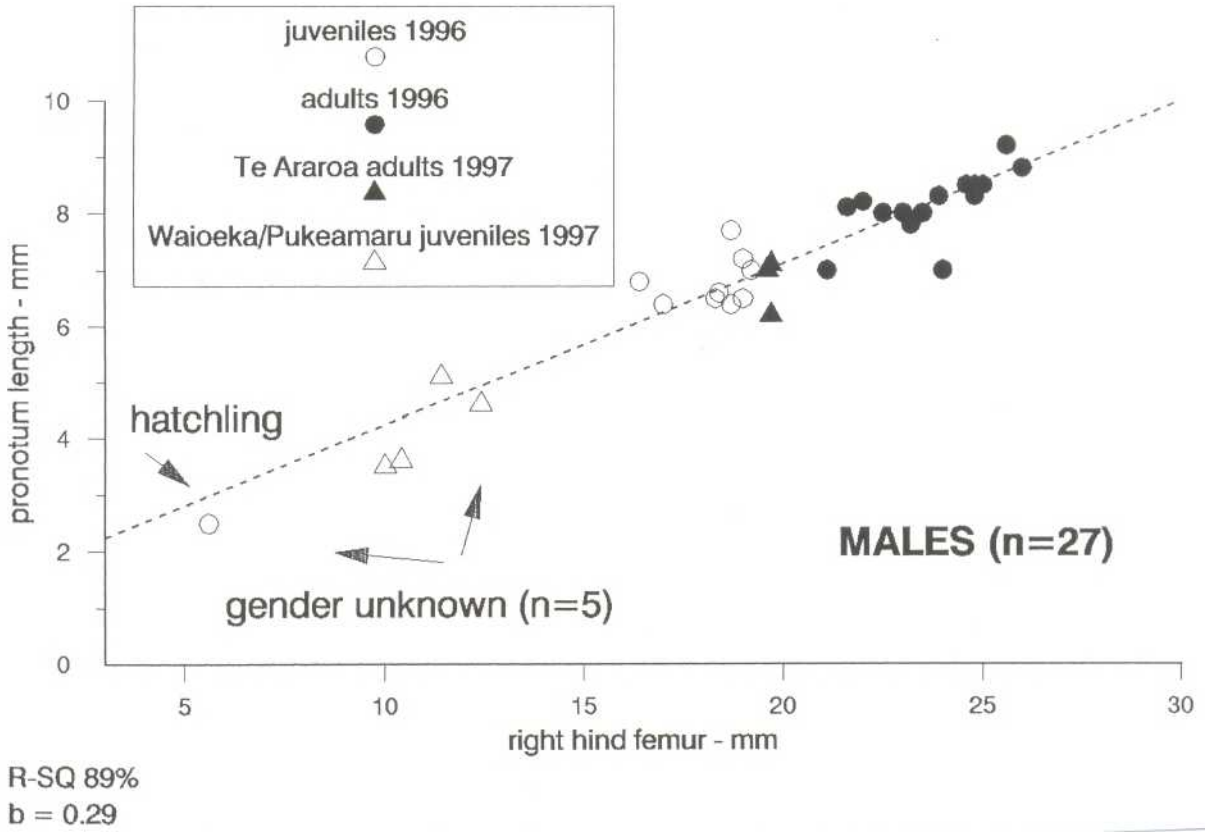


Figure 6. Size range of field-collected male weta. The regression line is fitted to the 1996 field data with additional data from the 1997 specimens superimposed. The hind femur length for one 1997 specimen with both hindlegs missing is estimated from the 1996 data. Males and females are indistinguishable in the smaller instars.

Plate 1. Hatchling weta beside five cent NZ coin.

Plate 2. Male weta - note asymmetry of tusks and smooth surface with tips pointing slightly down.

Plate 3. Weta cavities (*top and upper mid-left of area covered by stone)* with overlying stone removed to show entrance tunnel *(marked *)*, plugged at the outer end *(left)* and flood debris above *(upper right)*.